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APPLICATION NUMBER: 60/480,977

FILING DATE: June 23, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/20016

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)					
Given Name (first and middle (if any))		Family Name or Surname		Residence (City and either State or Foreign Country)	
Steven G.		Smarsh		Clinton Township; Michigan	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (280 characters max) NON-GLAZING DRESSING WHEEL					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		6		<input type="checkbox"/> CD(s), Number	
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<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE AMOUNT (\$)	
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The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
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Respectfully submitted,

SIGNATURE

Lynn E. Cargill

Date **6-23-03**

TYPED or PRINTED NAME **Lynn E. Cargill**

REGISTRATION NO.

31,598

(if appropriate)

Docket Number:

TruTech A-319

TELEPHONE **586-465-6600**

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Serial No.: Filed Herewith

Filing Date: June 23, 2003

Title: "NON-GLAZING DRESSING WHEEL"

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TRANSMITTAL LETTER

Dear Sir:

Enclosed herewith for filing in the above-identified provisional patent application, please find the following documents:

1. Transmittal Letter (original & copy) - 2 Pgs.;
2. Provisional Application For Patent Cover Sheet - 1 Pg.;
3. Application For Letters Patent (Specification) - 6 Pgs.;
4. Drawings - 5 Pgs.;
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Cynthia A. Ludeman

Name

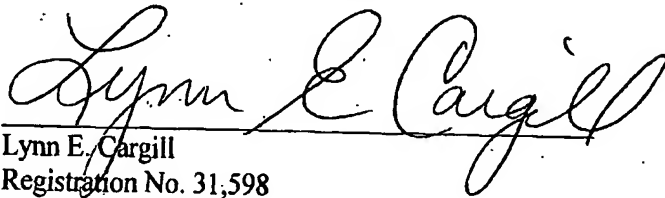
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Transmittal Letter
June 23, 2003
Page 2

The Commissioner is authorized to charge any underpayment in fees not covered in Check No. 5207 and/or credit any overpayment made in Check No. 5207 associated with this communication to Deposit Account No. 03-0682. A duplicate copy of this Transmittal is enclosed.

Respectfully submitted,

CARGILL & ASSOCIATES, P.L.L.C.

A handwritten signature in cursive script, reading "Lynn E. Cargill", written over a horizontal line.

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Date: June 23, 2003

CS/TroTech/A-3197/Trans062303

APPLICATION FOR LETTERS PATENT

for

*NON-GLAZING
DRESSING WHEEL*

by

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a Citizen of the United States of America

NON-GLAZING DRESSING WHEEL

BACKGROUND OF THE INVENTION

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In the centerless grinding industry, dressing wheels are conventionally used in order to true up the grinding wheel between jobs in order to maintain a high tolerance of accuracy in the grinding operations. In the course of using the dressing wheel to true up the grinding wheel, the dressing wheel can glaze the surface of the grinding wheel or it may cause heat expansion on the surface of the grinding wheel, and therefore destroys the effectiveness of the grinding wheel on later jobs. Other problems may also occur besides those mentioned. When heat expansion occurs, the grinding wheel then comes out of tolerance, and is incapable of accurately performing the grinding operation in the manner which is desired. As grinding operations become more and more precise, the dressing wheel becomes increasingly important to keep the grinding wheel in near perfection so that the subsequent work pieces are as close as possible to perfection.

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Although the invention will be described by way of examples hereinbelow for specific embodiments having certain features, it must also be realized that minor modifications that do not require undo experimentation on the part of the practitioner are covered within the scope and breadth of this invention. Additional advantages and other novel features of the present invention will be set forth in the description that follows and in particular will be apparent to those skilled in the art upon examination or may be learned within the practice of the invention. Therefore, the invention is capable of many other different embodiments and its details are capable of modifications of various aspects which will be obvious to those of ordinary skill in the art all without departing from the spirit of the present invention. Accordingly, the rest of the description will be regarded as illustrative rather than restrictive.

DETAILED DESCRIPTION OF THE INVENTION

The present invention achieves the above described advantages and objectives because it involves a new configuration of a dressing wheel, made in accordance with the present invention, which involves interrupted cutting of the grinding wheel, thereby alleviating or eliminating glazing and/or heat expansion of the grinding wheel being dressed. The dressing wheel may be made of a single or multiple sandwich concept, in which at least one material having a dressing wheel characteristic is utilized for the outer components of the sandwiched dressing wheel, as described more fully hereinbelow.

The present invention provides a non-glazing and non-heat expanding dressing wheel for dressing grinding wheels that is especially useful in centerless grinding and other applications. In the preferred embodiment, a surface having an interrupted cutting surface is disclosed which includes a star-shaped stainless steel cutting star which is sandwiched between two dressing wheel materials. The star may be made of stainless steel of any grade, cold rolled steel, copper, brass, or any other suitable metal. In addition, there may be more than one of the star-shaped dressing wheel components, but multiple star-shaped components may be utilized and sandwiched between various ceramic dressing wheel materials, or may be sandwiched next to each other in the middle of the dressing wheel. The star-shaped non-glazing dressing stone component also generally will include a central orifice for attachment to a spindle on the center less grinding machine.

Generally, the extent of the star-shaped or saw-blade-shaped dressing wheel component for interrupted cutting will be of an even diameter with the rest of the dressing wheel ceramic components, or may be slightly smaller in diameter in order to prevent ripping of the grinding wheel, rather than just interrupted cutting of the grinding wheel. Although it is reasoned that the interrupted cut component of the dressing wheel should be even with or smaller than the diameter of the dressing wheel, it is possible that for certain applications, the star-shaped component should be of a slightly greater diameter than the borazon, diamond, or ceramic dressing wheel component.

In addition, and in another embodiment, various other star-shaped components may also be made like a circular saw blade. This embodiment may include hardened tips, such that the bulk of the saw blade component may be made of almost any material, as long as the tips are hardened to effect interrupted cutting, thereby preventing glazing and or heat expansion of the grinding wheel be dressed. Further, the star-shaped component or the saw-blade component may also be made itself of a sandwiched material as would be known in the metallurgical art, and may be incorporated into the present invention without undo experimentation. The saw-blade configuration may also take the shape of the saw-blade configuration of FIG. 18 of U.S. Patent Application No. 09/720,576, filing date of December 22, 2000, which is incorporated herein by reference.

Looking now to the drawings, we first look at FIG. 1A, where a star-shaped dressing wheel component has been taken out of the dressing wheel of the present invention, and is generally shown and referred to by numeral 10. Star-shaped component 10 includes star tips 12, and has a central orifice 14 therethrough in order to allow for mounting onto a spindle assembly which is utilized to rotate the dressing wheel. The remaining components are shown in subsequent drawings.

FIG. 1B illustrates another embodiment of the interrupting cut portion of the present invention, i.e. one that looks like the saw blade of a circular saw, and is also generally denoted by numeral 10. The interrupted cutting surfaces, or star tips 12, are shown having hardened tips 16. Again, central orifice 14 extends therethrough for mounting on a spindle assembly, while the bulk of the star-shaped component 10 may be made of any suitable material, so long as the tips are hardened as shown as tips 16. As discussed hereinabove, different configurations of the materials and interrupted cutting surfaces of the star-shaped component 10 may be utilized, without undo experimentation, so long as it achieves the objectives of the present invention, i.e. to prevent or alleviate glazing and/or heat expansion of a wheel being dressed. The great number of possibilities of the configurations of the tips for the star-shaped component 10 are too numerous to list here, or to even show here, but all of them may be utilized, and are within the scope of the present invention. Again, so long as interrupted cutting is effected by the dressing wheel, the star-shaped component 10 will have achieved its purpose.

FIG 2A illustrates the preferred embodiment of the present invention, including a multi-layer sandwiched dressing wheel generally denoted by the numeral 20. Within multi-layer dressing wheel 20, there is a first dressing wheel component 22 and a second dressing wheel component 24 located on either side of the star-shaped component (only the tips are shown), but showing the star-shaped tips 26 extending to the outer diameter of both of the first and second dressing wheel components 22 and 24, respectively. Although the first and second dressing wheel components 22 and 24 may be made of any suitable material, such as diamond, or borazon, the present invention envisions the use of any suitable hard material including any suitable ceramic, including silicon carbide, silicon nitride, silicon oxynitride, silicon carbonitride, boron carbide, tungsten carbide, titanium carbide, or combinations of those ceramics, or any other suitable ceramic, including aluminum oxide, aluminum nitride, aluminum carbide, or any of the other super hard ceramics. In the present invention, the preferred embodiment includes the use of a silicon carbide material for the first dressing wheel component, while aluminum oxide is used for the second dressing wheel component.

FIG. 2B is a side elevational view of the dressing wheel sandwich 20 in accordance with the present invention, illustrating the relative placement of the first dressing wheel component 22 and the second dressing wheel component 24, with sandwiching the star-shaped interrupted cutting component 26. Star-shaped component 26 extends to the diameter of the other dressing wheel components 22 and 24, and may be of the same diameter, a smaller diameter, or a slightly larger diameter.

FIG. 2C illustrates yet another embodiment including a multi-layer dressing wheel 30 having more than one star-shaped component sandwiched therein. Multi-layer dressing wheel 30 will include at least a first dressing wheel component 32, a second dressing wheel component 34, and a third dressing wheel component 36. Sandwiched therebetween will be a first star-shaped component 38, and a second star-shaped component 40.

The foregoing description of a preferred embodiment of the invention has been presented for purposes of illustration and description. It is not intended to be to be exhaustive or to limit the invention to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings with regards to the specific embodiments. The
5 embodiment was chosen and described in order to best illustrate the principles of the invention and its practical applications to thereby enable one of ordinary skill in the art to best utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated.

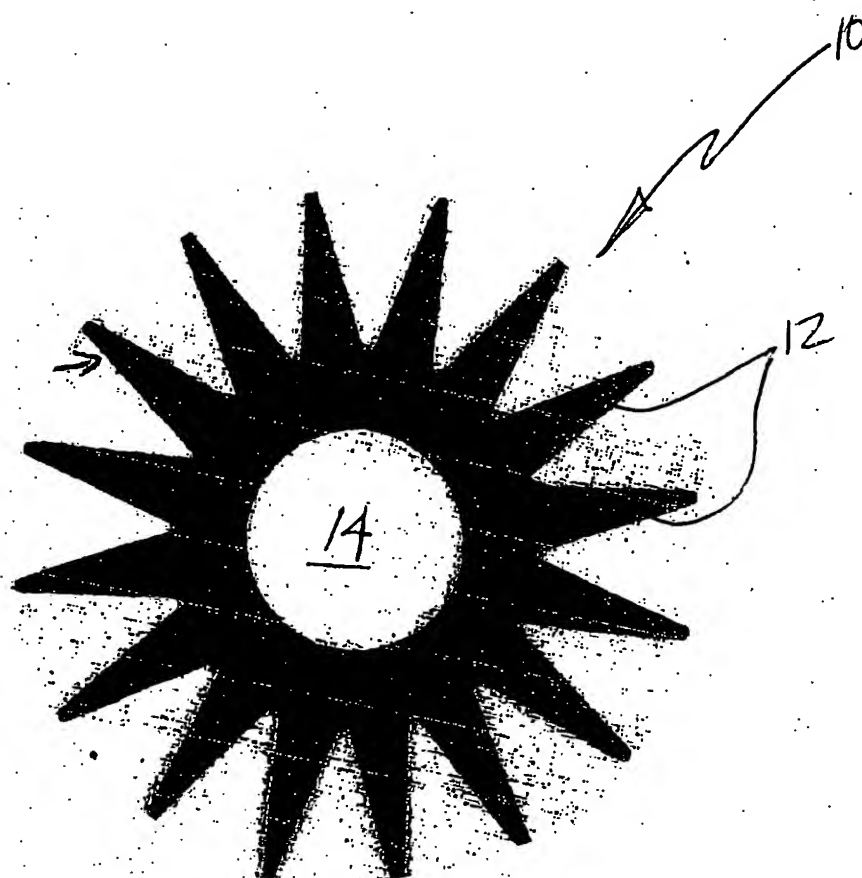


FIG 1A

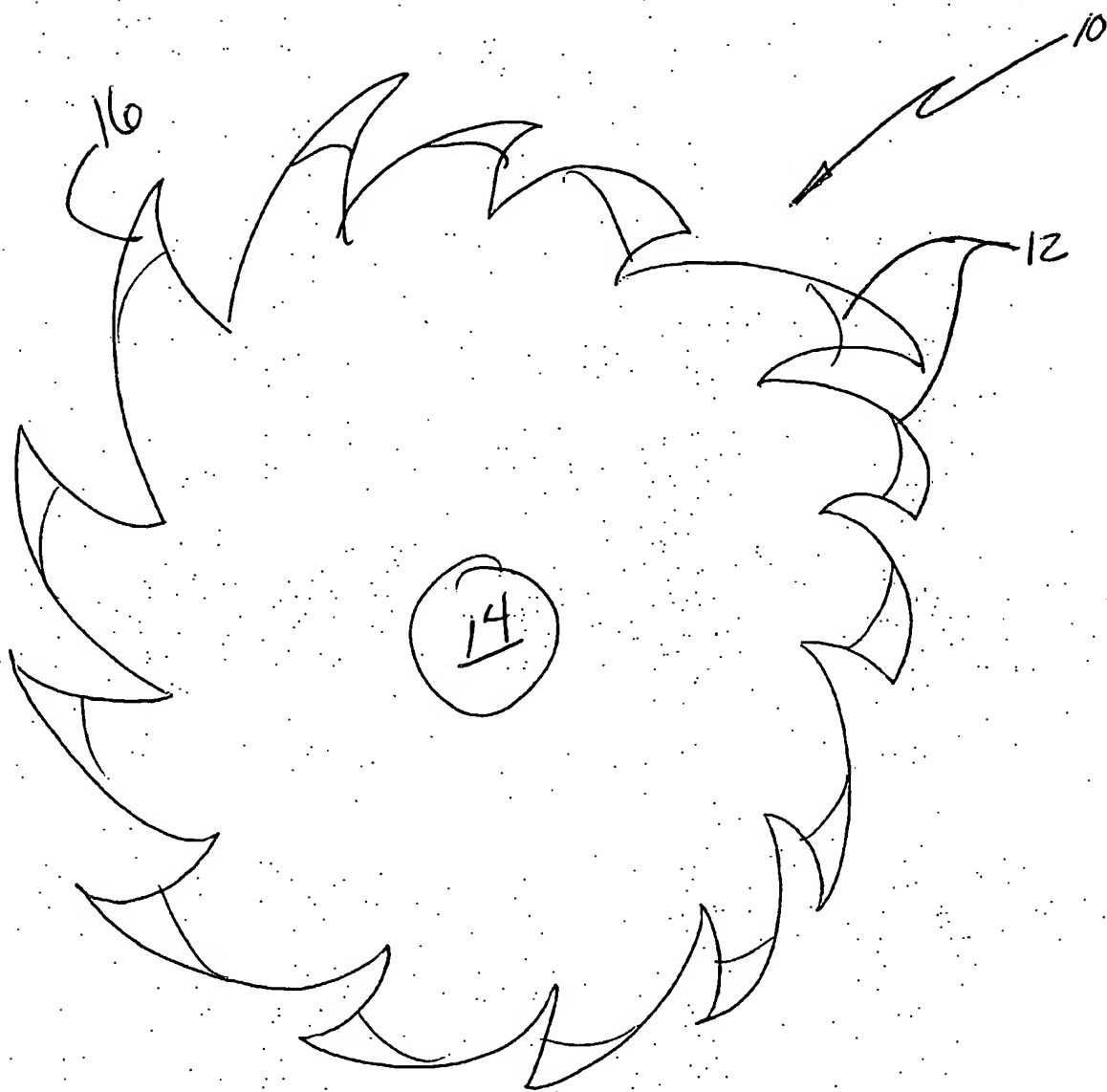


Fig 1 B

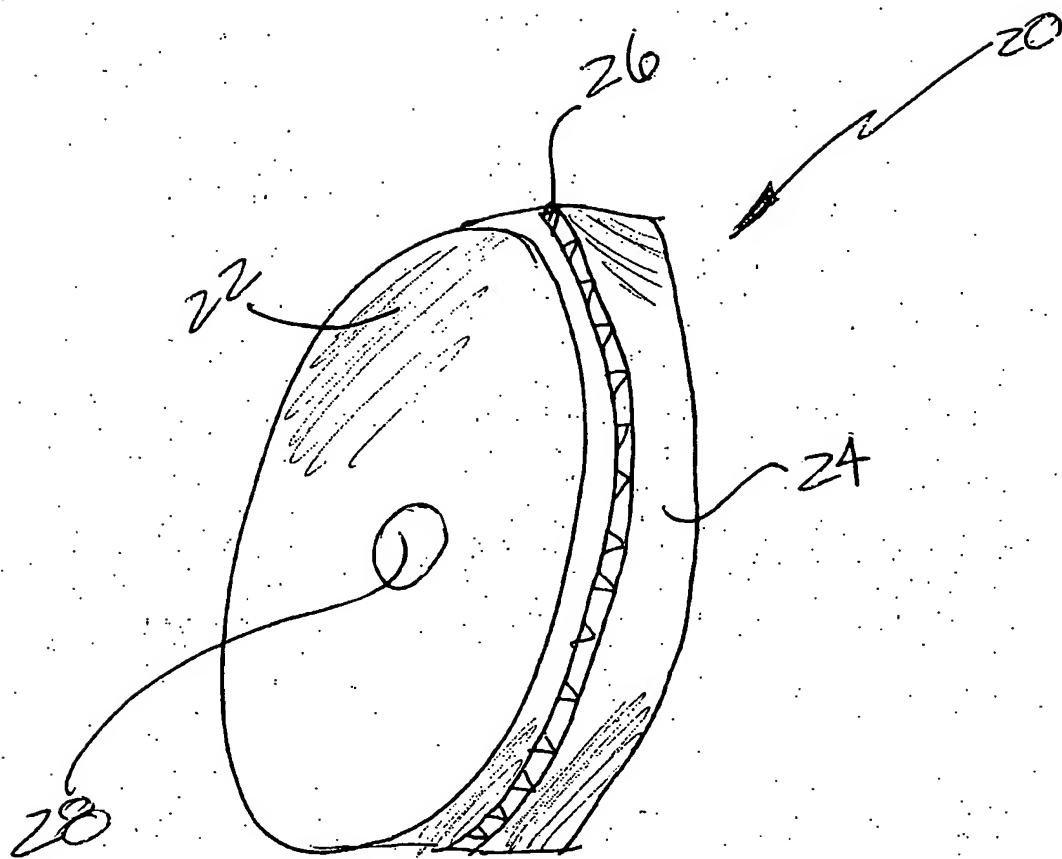


FIG. 2A

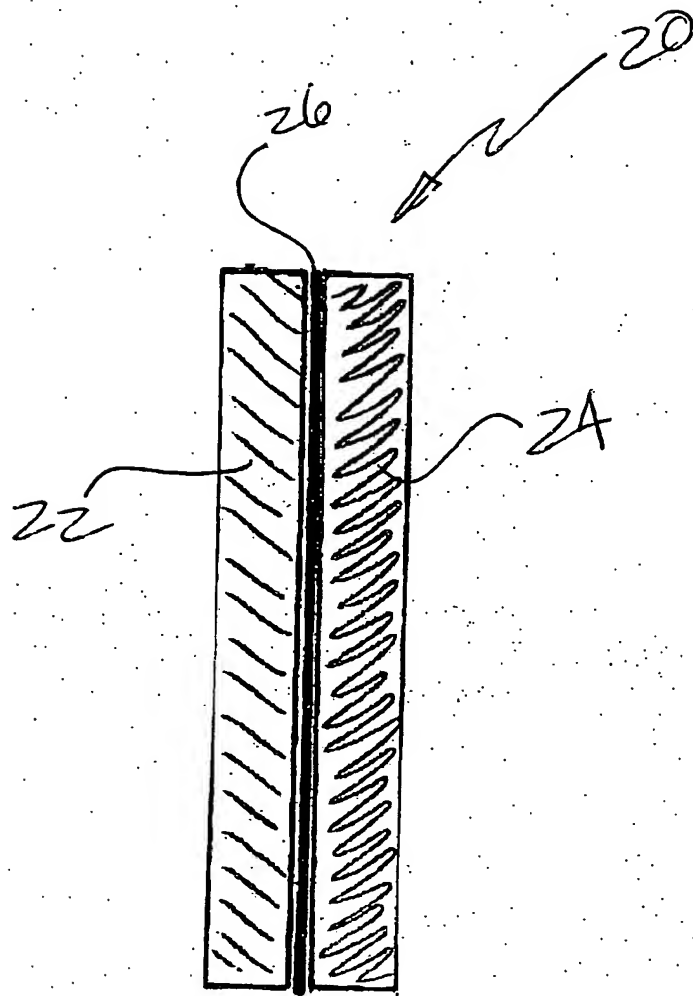


FIG 2B

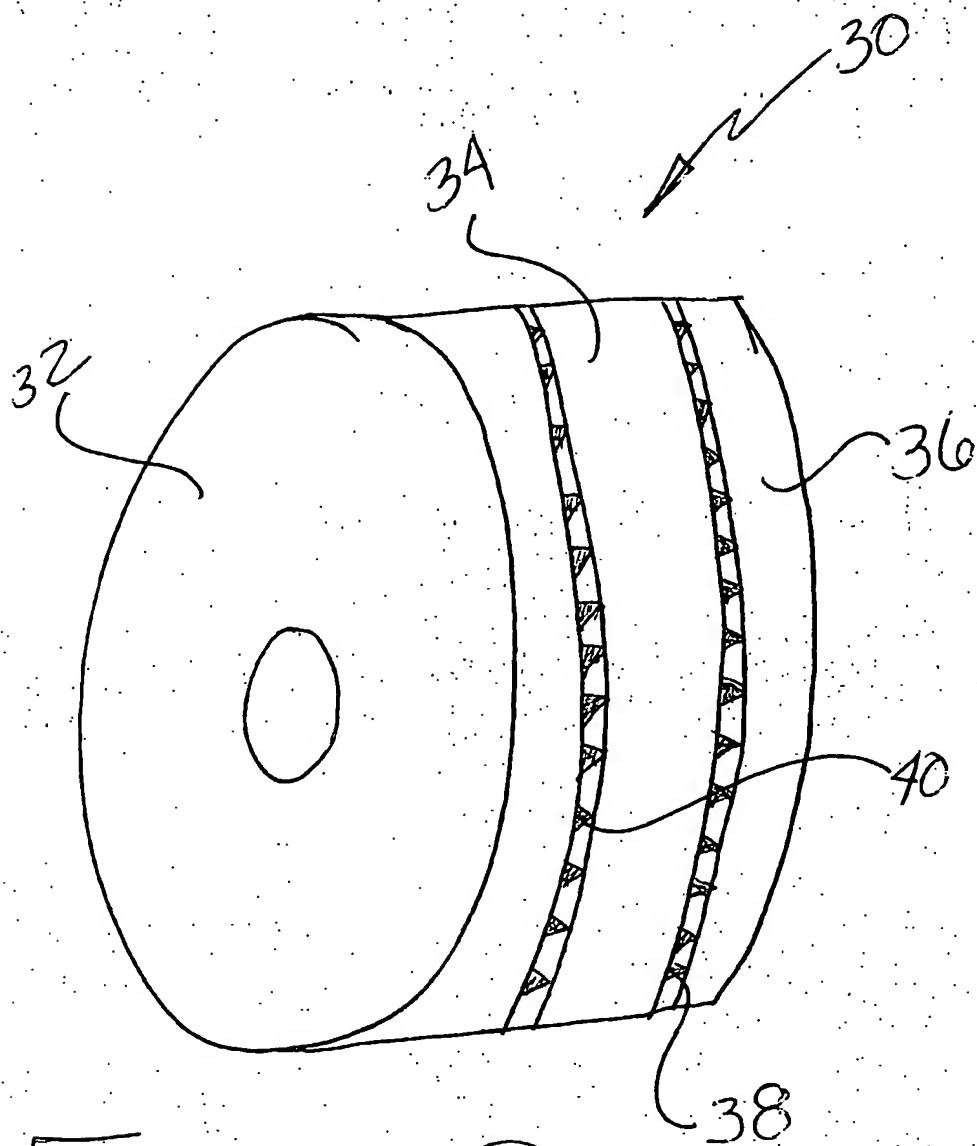


FIG 2C

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